

# Orbital Welding System

## High-Performance Weld Head



### Series 8HPH

- Accommodates outside diameters ranging from 1/8 to 1/2 in. and 3 to 12 mm
- Bench top mounted fixture
- Optical speed control—no tachometer or calibration required
- Cycle life: 10 000 welds mean-time-to-maintenance (MTTM) for 1/4 in. diameter; 3000 welds MTTM for 1/2 in. diameter
- Welding capability: 60 welds per hour for 1/4 in. diameter; 30 welds per hour for 1/2 in. diameter
- Adjustable centering gauge included
- Integrated work support system available

Swagelok®

## High-Performance Weld Head—Series 8HPH

### Technical Data

| Tube Size |      | Minimum Axial Clearance | Minimum Radial Clearance | Maximum Average Weld Current | Maximum Welds per Hour |
|-----------|------|-------------------------|--------------------------|------------------------------|------------------------|
| in.       | mm   | in. (mm)                | in. (mm)                 |                              |                        |
| 1/8       | 3    | 0.48 (12.2)             | 1.04 (26.4)              | 30 A                         | 60 <sup>①</sup>        |
| 1/4       | 6, 8 |                         |                          |                              |                        |
| 3/8       | 10   |                         |                          | 38 A                         | 30 <sup>②</sup>        |
| 1/2       | 12   |                         |                          |                              |                        |

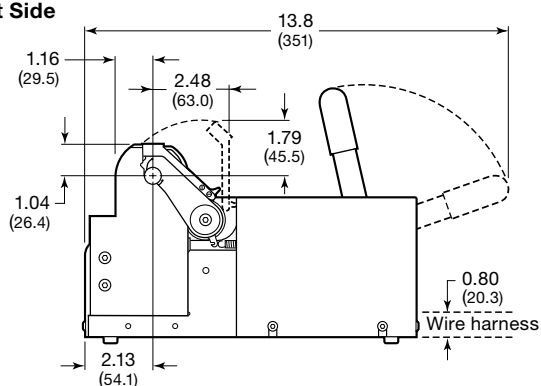
① Based on welding 1/4 × 0.035 in. 316L tubing.

② Based on welding 1/2 × 0.049 in. 316L tubing.

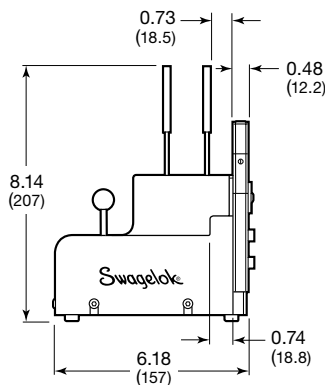
### Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change.

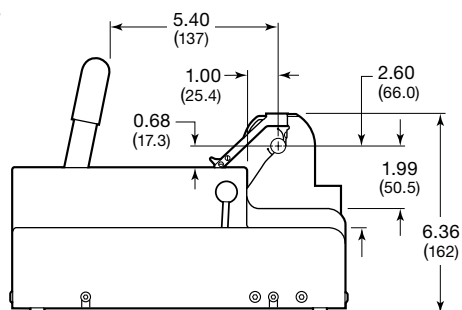
#### Right Side



#### Front



#### Left Side



### Ordering Information

#### High-Performance Weld Head

The Swagelok® Series 8HPH high-performance weld head is shipped with a fixture kit, a tool package, an electrode package, a 12.5 ft extension cable, and a user's manual.

To order a Swagelok Series 8HPH weld head, add a fixture size designator to basic ordering number **SWS-8HPH-**.

Example: SWS-8HPH-02

| Nominal Outside Diameter | Fixture Size Designator |
|--------------------------|-------------------------|
| Fractional, in.          |                         |
| 1/8                      | 02                      |
| 1/4                      | 04                      |
| 3/8                      | 06                      |
| 1/2                      | 08                      |
| Metric, mm               |                         |
| 3                        | 3MM                     |
| 6                        | 6MM                     |
| 8                        | 8MM                     |
| 10                       | 10MM                    |
| 12                       | 12MM                    |

#### Fixture Kits

Fixture kits are available for outside weld joint diameters of 1/8 to 1/2 in. and 3 to 12 mm.

- Each fixture kit includes one fixed plate, two moveable plates, and a centering gauge.
- One fixture kit is included with each high-performance weld head.

To order an additional fixture kit, select the kit ordering number from the table below.



| Nominal Outside Diameter | Fixture Kit Ordering Number |
|--------------------------|-----------------------------|
| Fractional, in.          |                             |
| 1/8                      | SWS-8HPH-SP-02              |
| 1/4                      | SWS-8HPH-SP-04              |
| 3/8                      | SWS-8HPH-SP-06              |
| 1/2                      | SWS-8HPH-SP-08              |
| Metric, mm               |                             |
| 3                        | SWS-8HPH-SP-3MM             |
| 6                        | SWS-8HPH-SP-6MM             |
| 8                        | SWS-8HPH-SP-8MM             |
| 10                       | SWS-8HPH-SP-10MM            |
| 12                       | SWS-8HPH-SP-12MM            |

## Accessories

### Centering Gauge



The weld head centering gauge assures the operator that the weld components are centered in the fixture. One centering gauge is included with each high-performance weld head, based on the fixture size specified.

To order an additional centering gauge, select an ordering number from the table at right.

| Nominal Outside Diameter | Centering Gauge Ordering Number |
|--------------------------|---------------------------------|
| <b>Fractional, in.</b>   |                                 |
| 1/8                      | SWS-8HPCG-02                    |
| 1/4                      | SWS-8HPCG-04                    |
| 3/8                      | SWS-8HPCG-06                    |
| 1/2                      | SWS-8HPCG-08                    |
| <b>Metric, mm</b>        |                                 |
| 3                        | SWS-8HPCG-3MM                   |
| 6                        | SWS-8HPCG-6MM                   |
| 8                        | SWS-8HPCG-8MM                   |
| 10                       | SWS-8HPCG-10MM                  |
| 12                       | SWS-8HPCG-12MM                  |

### Tungsten Electrodes

Swagelok electrodes provide consistent, repeatable welds.

- Electrodes consist of 2 % ceriated tungsten, axially ground to rigid specifications.
- Electrodes are for use with argon shielding gas. Other shielding gas mixtures may require electrodes with tip diameters other than 0.012 in. (0.30 mm).
- Electrodes must be ordered in multiples of ten.

Dimensions, in inches (millimeters), are for reference only and are subject to change.



| Weld Joint Nominal Outside Diameter | Nominal Gap in. (mm) | Electrode Length (L) in. (mm) | Ordering Number       |
|-------------------------------------|----------------------|-------------------------------|-----------------------|
| <b>Fractional, in.</b>              |                      |                               |                       |
| 1/8                                 | 0.020 (0.51)         | 0.533 (13.5)                  | SWS-C.040-.533-.012-P |
|                                     | 0.025 (0.64)         | 0.528 (13.4)                  | SWS-C.040-.528-.012-P |
|                                     | 0.030 (0.76)         | 0.523 (13.3)                  | SWS-C.040-.523-.012-P |
|                                     | 0.035 (0.89)         | 0.518 (13.2)                  | SWS-C.040-.518-.012-P |
| 1/4                                 | 0.025 (0.64)         | 0.465 (11.8)                  | SWS-C.040-.465-.012-P |
|                                     | 0.030 (0.76)         | 0.460 (11.7)                  | SWS-C.040-.460-.012-P |
|                                     | 0.035 (0.89)         | 0.455 (11.6)                  | SWS-C.040-.455-.012-P |
|                                     | 0.040 (1.02)         | 0.450 (11.4)                  | SWS-C.040-.450-.012-P |
| 3/8                                 | 0.025 (0.64)         | 0.403 (10.2)                  | SWS-C.040-.403-.012-P |
|                                     | 0.030 (0.76)         | 0.398 (10.1)                  | SWS-C.040-.398-.012-P |
|                                     | 0.035 (0.89)         | 0.393 (10.0)                  | SWS-C.040-.393-.012-P |
|                                     | 0.040 (1.02)         | 0.388 (9.9)                   | SWS-C.040-.388-.012-P |
| 1/2                                 | 0.030 (0.76)         | 0.335 (8.5)                   | SWS-C.040-.335-.012-P |
|                                     | 0.035 (0.89)         | 0.330 (8.4)                   | SWS-C.040-.330-.012-P |
|                                     | 0.040 (1.02)         | 0.325 (8.3)                   | SWS-C.040-.325-.012-P |
|                                     | 0.045 (1.14)         | 0.320 (8.1)                   | SWS-C.040-.320-.012-P |

| Weld Joint Nominal Outside Diameter | Nominal Gap in. (mm) | Electrode Length (L) in. (mm) | Ordering Number       |
|-------------------------------------|----------------------|-------------------------------|-----------------------|
| <b>Metric, mm</b>                   |                      |                               |                       |
| 3                                   | 0.020 (0.51)         | 0.536 (13.6)                  | SWS-C.040-.536-.012-P |
|                                     | 0.025 (0.64)         | 0.531 (13.5)                  | SWS-C.040-.531-.012-P |
|                                     | 0.030 (0.76)         | 0.526 (13.4)                  | SWS-C.040-.526-.012-P |
|                                     | 0.035 (0.89)         | 0.521 (13.2)                  | SWS-C.040-.521-.012-P |
|                                     | 0.040 (1.02)         | 0.516 (13.1)                  | SWS-C.040-.516-.012-P |
| 6                                   | 0.025 (0.64)         | 0.472 (12.0)                  | SWS-C.040-.472-.012-P |
|                                     | 0.030 (0.76)         | 0.467 (11.9)                  | SWS-C.040-.467-.012-P |
|                                     | 0.035 (0.89)         | 0.462 (11.7)                  | SWS-C.040-.462-.012-P |
|                                     | 0.040 (1.02)         | 0.457 (11.6)                  | SWS-C.040-.457-.012-P |
|                                     | 0.045 (1.14)         | 0.452 (11.5)                  | SWS-C.040-.452-.012-P |
| 8                                   | 0.025 (0.64)         | 0.433 (11.0)                  | SWS-C.040-.433-.012-P |
|                                     | 0.030 (0.76)         | 0.428 (10.9)                  | SWS-C.040-.428-.012-P |
|                                     | 0.035 (0.89)         | 0.423 (10.7)                  | SWS-C.040-.423-.012-P |
|                                     | 0.040 (1.02)         | 0.418 (10.6)                  | SWS-C.040-.418-.012-P |
|                                     | 0.045 (1.14)         | 0.413 (10.5)                  | SWS-C.040-.413-.012-P |
| 10                                  | 0.030 (0.76)         | 0.388 (9.9)                   | SWS-C.040-.388-.012-P |
|                                     | 0.035 (0.89)         | 0.383 (9.7)                   | SWS-C.040-.383-.012-P |
|                                     | 0.040 (1.02)         | 0.378 (9.6)                   | SWS-C.040-.378-.012-P |
|                                     | 0.045 (1.14)         | 0.373 (9.5)                   | SWS-C.040-.373-.012-P |
|                                     | 0.050 (1.27)         | 0.368 (9.4)                   | SWS-C.040-.368-.012-P |
| 12                                  | 0.030 (0.76)         | 0.349 (8.9)                   | SWS-C.040-.349-.012-P |
|                                     | 0.035 (0.89)         | 0.344 (8.7)                   | SWS-C.040-.344-.012-P |
|                                     | 0.040 (1.02)         | 0.339 (8.6)                   | SWS-C.040-.339-.012-P |
|                                     | 0.045 (1.14)         | 0.334 (8.5)                   | SWS-C.040-.334-.012-P |
|                                     | 0.050 (1.27)         | 0.329 (8.4)                   | SWS-C.040-.329-.012-P |

## Accessories

### Weld Head Extension Cables

Swagelok weld head extension cables provide weld head operation up to 50 ft (15.2 m) away from the power supply.

- Cables are available in lengths of 12.5 and 37.5 ft (3.8 and 11.4 m).
- One 12.5 ft extension cable is supplied with each Series 8HPH high-performance weld head.



| Extension Cable<br>ft (m) | Ordering<br>Number |
|---------------------------|--------------------|
| 12.5 (3.8)                | SWS-WHEC-B-12.5FT  |
| 37.5 (11.4)               | SWS-WHEC-B-37.5FT  |

### Swagelok Orbital Welding System

For a complete Swagelok orbital welding system, order a Series 8HPH high-performance weld head and a Swagelok M200 power supply. See the *Swagelok Welding System M200 Power Supply* catalog, MS-02-342.



### Work Support System



The Swagelok work support system provides a variety of expandable configurations for work support of tubing runs and valves.

- The **left work support kit** contains the work support slide base, work support rails, thumb screws, and work support left brace.
- The **right work support kit** contains the work support slide base, work support rails, thumb screws, and work support right brace.
- The **full work support kit** contains all left and right work support kit components.

| Work Support<br>Kit Description | Ordering<br>Number |
|---------------------------------|--------------------|
| Left                            | SWS-8HPH-WS-LT     |
| Right                           | SWS-8HPH-WS-RT     |
| Full                            | SWS-8HPH-WS        |

#### Safe Product Selection

**When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.**

**Caution: Do not mix or interchange parts with those of other manufacturers.**

### Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit [swagelok.com](http://swagelok.com) or contact your authorized Swagelok representative.